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09/892,139	06/26/2001	Yasuhiko Mizushima	P/1878-171	1950

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EXAMINER	
PHAN, HANH	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 06/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/892,139	MIZUSHIMA ET AL.	
	Examiner	Art Unit	
	Hanh Phan	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 April 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,5,6 and 8-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 5, 6 and 8-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is responsive to the Amendment filed on 04/19/2006.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the features "**a plurality of first devices, each of which is equipped with an optical transmitter each transmitter transmitting signals of a differing wavelength**", "**a plurality of second devices, each of which is equipped with an optical receiver that receives optical signals that are transmitted from said optical transmitters**" and "**each receiver receiving optical signals of a different wavelength**" specified in the claims 1 and 10 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering

of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1, 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laine (US Patent No. 6,252,690) in view of Scifres (US Patent No. 6,414,774).

Regarding claims 1 and 10, referring to Figures 1 and 4, Laine discloses an optical data bus communication system of an artificial satellite, comprising:

a plurality of first device (i.e., a plurality of first devices E1, E2,.., En, and central Unit, Fig. 1), each of which is equipped with an optical transmitter (i.e., optical transmitter DEM of Equipments E1-En and optical transmitter DEC of central Unit, Fig. 1);

a reflection means (i.e., reflection means 10 and 12, Figs. 1 and 4) that is provided on the entire inner surface of, or at prescribed locations inside, the case of the artificial satellite; and

a plurality of second devices (i.e., a plurality of second devices E1, E2,.., En, and central Unit, Fig. 1), each of which is equipped with an optical receiver (i.e., optical receiver DRC of Equipments E1-En and optical receiver DRM of central unit, Fig. 1) that receives optical signals that are transmitted from the optical transmitters both directly and after reflection and diffusing by the reflection means, and reproduces said optical signals from these received signals (see from col. 3, line 24 to col. 5, line 48).

Laine differs from claims 1 and 10 in that he fails to teach each optical transmitter transmitting signals of a different wavelength and each optical receiver receiving optical signals of a different wavelength. However, Scifres in US Patent No. 6,414,774 teaches each optical transmitter transmitting signals of a different wavelength and each optical receiver receiving optical signals of a different wavelength (Figures 1 and 2, col. 3, lines 52-67 and col. 4, lines 1-15). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the each optical transmitter transmitting signals of a different wavelength and each optical receiver receiving optical signals of a different wavelength as taught by Scifres in the system of Laine. One of ordinary skill in the art would have been motivated to do this since Scifres suggests in column 3, lines 52-67 and col. 4, lines 1-15 that using such the each optical transmitter transmitting signals of a different wavelength and each optical receiver receiving optical signals of a different wavelength have advantage of allowing reducing the interference between the signals.

Regarding claim 6, Laine further teaches the reflection means (i.e., mirrors 10 and 12, Fig. 1) is a polygon reflection mirror.

5. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Laine (US Patent No. 6,252,690) in view of Scifres (US Patent No. 6,414,774) and further in view of Heflinger (US Patent No. 5,726,786).

Regarding claim 5, Laine as modified by Scifres teaches all the aspects of the claimed invention except fails to specifically teach the optical transmitter is equipped with a wide-angle LED as a light source for transmission, and the optical receiver is equipped with a wide-angle photodiode for receiving light emitted from the LED. However, Heflinger teaches the optical transmitter is equipped with a wide-angle LED as a light source for transmission, and the optical receiver is equipped with a wide-angle photodiode for receiving light emitted from the LED (Figs. 1-4, col. 13, lines 60-67 and col. 14, lines 1-12). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the optical transmitter is equipped with a wide-angle LED as a light source for transmission, and the optical receiver is equipped with a wide-angle photodiode for receiving light emitted from the LED as taught by Heflinger in the system of Laine modified by Scifres. One of ordinary skill in the art would have been motivated to do this since Heflinger suggests in column 13, lines 60-67 and col. 14, lines 1-12 that using such the optical transmitter is equipped with a wide-angle LED as a light source for transmission, and the optical receiver is equipped with a wide-angle photodiode for receiving light emitted from the LED has advantage of allowing providing a passive optical free space data bus and one transmitter can be transmit the signal to other receivers.

6. Claims 8, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laine (US Patent No. 6,252,690) in view of Scifres (US Patent No. 6,414,774) and further in view of Ohhata et al (US Patent No. 6,304,357).

Regarding claims 8 and 11, Laine as modified by Scifres teaches all the aspects of the claimed invention except fails to teach the optical receiver comprises an 0/E converter for converting received optical signals to electrical signals, again control means for converting electrical signals that are converted by the 0/E converter to electrical signals of a required level; and a pulse width shaping means for converting electrical signals of a required level that are converted by the gain control means to digital signals of a prescribed pulse width. However, Ohhata in US Patent No. 6,304,357 teaches an optical receiver comprises an 0/E converter for converting received optical signals to electrical signals, again control means for converting electrical signals that are converted by the 0/E converter to electrical signals of a required level; and a pulse width shaping means for converting electrical signals of a required level that are converted by the gain control means to digital signals of a prescribed pulse width (Fig. 1, col. 1, lines 10-44). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the optical receiver comprises an 0/E converter for converting received optical signals to electrical signals, again control means for converting electrical signals that are converted by the 0/E converter to electrical signals of a required level; and a pulse width shaping means for converting electrical signals of a required level that are converted by the gain control means to digital signals of a prescribed pulse width as taught by Ohhata in the system of Laine

modified by Scifres. One of ordinary skill in the art would have been motivated to do this since Ohhata suggests in column 1, lines 10-44 that using such the optical receiver comprises an 0/E converter for converting received optical signals to electrical signals, again control means for converting electrical signals that are converted by the 0/E converter to electrical signals of a required level; and a pulse width shaping means for converting electrical signals of a required level that are converted by the gain control means to digital signals of a prescribed pulse width has advantage of allowing increasing the power level of signal to a constant level and providing an optical receiver with high sensitivity and wide dynamic range.

Regarding claim 9, the combination of Laine, Scifres and Ohhata teaches the pulse width shaping means comprises: a comparator that takes output of the gain control means as one input and a reference voltage as another input and, based on the positive or negative of the difference between these inputs, converts electrical signals of a required level that are output from said gain control means to digital signals; and a sampling means that performs sampling by a sampling signal of a prescribed frequency to convert digital signals that are converted by said comparator to digital signals of a prescribed pulse width (Fig. 1 of Ohhata, col. 1, lines 10-44).

7. Claims 1, 5, 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heflinger (US Patent No. 5,726,786) in view of Scifres (US Patent No. 6,414,774).

Regarding claims 1 and 10, referring to Figures 1-4, Heflinger teaches an optical data bus communication system of an artificial satellite, comprising:

a plurality of first devices, each of which is equipped with an optical transmitter (i.e., optical transmitters 1-3, Fig. 1, col. 14, lines 2-4) each transmitter transmitting signals;

a reflection means (i.e., a Flat mirror, Fig. 1) that is provided on the entire inner surface of, or at prescribed locations inside, the case of the artificial satellite; and

a plurality of second devices, each of which is equipped an optical receiver (i.e., optical receivers 1-3, Fig. 1, col. 14, lines 2-4) that receives optical signals that are transmitted from the optical transmitters (i.e., optical transmitters 1-3, Fig. 1) both directly and after reflection and diffusing by the reflection means (i.e., Flat mirror, Fig. 1), each receiver receiving optical signals and reproducing the optical signals from these received signals (see Figures 1-4 and col. 14, lines 45-67 and col. 19, lines 32-62).

Hefinger differs from claims 1 and 10 in that he fails to specifically teach each optical transmitter transmitting signals of a different wavelength and each optical receiver receiving optical signals of a different wavelength. However, Scifres in US Patent No. 6,414,774 teaches each optical transmitter transmitting signals of a different wavelength and each optical receiver receiving optical signals of a different wavelength (Figures 1 and 2, col. 3, lines 52-67 and col. 4, lines 1-15). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the each optical transmitter transmitting signals of a different wavelength and each optical receiver receiving optical signals of a different wavelength as taught by Scifres in the system of Hefinger. One of ordinary skill in the art would have been

motivated to do this since Scifres suggests in column 3, lines 52-67 and col. 4, lines 1-15 that using such the each optical transmitter transmitting signals of a different wavelength and each optical receiver receiving optical signals of a different wavelength have advantage of allowing reducing the interference between the signals.

Regarding claim 5, Heflinger further teaches the optical transmitter is equipped with a wide-angle LED as a light source for transmission, and the optical receiver is equipped with a wide-angle photodiode for receiving light emitted from the LED (Figs. 1-4, col. 13, lines 60-67 and col. 14, lines 1-12).

Regarding claim 6, Heflinger further teaches the reflection means is a polygon reflection mirror (Figs. 1 and 2).

8. Claims 8, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable Heflinger (US Patent No. 5,726,786) in view of Scifres (US Patent No. 6,414,774) and further in view of Ohhata et al (US Patent No. 6,304,357).

Regarding claims 8 and 11, Heflinger as modified by Scifres teaches all the aspects of the claimed invention except fails to teach the optical receiver comprises an 0/E converter for converting received optical signals to electrical signals, again control means for converting electrical signals that are converted by the 0/E converter to electrical signals of a required level; and a pulse width shaping means for converting electrical signals of a required level that are converted by the gain control means to digital signals of a prescribed pulse width. However, Ohhata in US Patent No. 6,304,357 teaches an optical receiver comprises an 0/E converter for converting received optical

signals to electrical signals, again control means for converting electrical signals that are converted by the 0/E converter to electrical signals of a required level; and a pulse width shaping means for converting electrical signals of a required level that are converted by the gain control means to digital signals of a prescribed pulse width (Fig. 1, col. 1, lines 10-44). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the optical receiver comprises an 0/E converter for converting received optical signals to electrical signals, again control means for converting electrical signals that are converted by the 0/E converter to electrical signals of a required level; and a pulse width shaping means for converting electrical signals of a required level that are converted by the gain control means to digital signals of a prescribed pulse width as taught by Ohhata in the system of Heflinger modified by Scifres. One of ordinary skill in the art would have been motivated to do this since Ohhata suggests in column 1, lines 10-44 that using such the optical receiver comprises an 0/E converter for converting received optical signals to electrical signals, again control means for converting electrical signals that are converted by the 0/E converter to electrical signals of a required level; and a pulse width shaping means for converting electrical signals of a required level that are converted by the gain control means to digital signals of a prescribed pulse width has advantage of allowing increasing the power level of signal to a constant level and providing an optical receiver with high sensitivity and wide dynamic range.

Regarding claim 9, the combination of Heflinger, Scifres and Ohhata teaches the pulse width shaping means comprises: a comparator that takes output of the gain

control means as one input and a reference voltage as another input and, based on the positive or negative of the difference between these inputs, converts electrical signals of a required level that are output from said gain control means to digital signals; and a sampling means that performs sampling by a sampling signal of a prescribed frequency to convert digital signals that are converted by said comparator to digital signals of a prescribed pulse width (Fig. 1of Ohhata, col. 1, lines 10-44).

Response to Arguments

9. Applicant's arguments with respect to claims 1, 5, 6 and 8-11 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (571)272-3035.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

HANH PHAN
PRIMARY EXAMINER